Week 12: Syntax

Solutions

(1) **Constituency practice.** There is an underlined string of words in each of the following sentences. Some of these are constituents, and some of them are not. For each sentence, indicate whether the underlined portion is a constituent and justify your answer using the techniques presented in the lectures. Use the movement test for sentences a-b and the substitution test for c-d.

   (a) At least one politician <u>told several lies</u> yesterday.

   Substitution test: At least one politician <u>did so</u> yesterday (yes)

   (b) Amazon shipped my friend <u>the wrong textbook</u>.

   Movement test: <u>The wrong textbook</u>, Amazon shipped my friend (yes)

   (c) The very hungry caterpillar <u>ate two pears on Tuesday</u> and three plums on Wednesday.

   Substitution test: *The very hungry caterpillar <u>did so</u> and three plums on Wednesday (no)
   Movement test: <u>Ate two pears on Tuesday</u>, the very hungry caterpillar and three plums on Wednesday (no)
   Clefting test: It was <u>ate two pears on Tuesday</u> that the very hungry caterpillar and three plums (no)

   (d) <u>A man who was carrying several books</u> tripped on the library steps.

   Substitution test: He tripped on the library steps (yes)

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(2) **Phrase structure rules.** Below is the phrase structure tree for the sentence '**a girl with homework studied in the library**'. List all the phrase structure rules that were used to construct this tree.

   S → VP NP   VP → V PP
   NP → Det N   NP → N
   NP → NP PP
   PP → P NP

```
                              S
                   ┌──────────┴──────────┐
                  NP                     VP
             ┌────┴────┐            ┌────┴────┐
            NP         PP           V         PP
           ╱ ╲        ╱ ╲          │         ╱ ╲
         Det   N    P     NP     studied   P     NP
          │    │    │     │                │    ╱ ╲
          a   girl with   N                in  Det   N
                          │                     │    │
                       homework               the  library
```
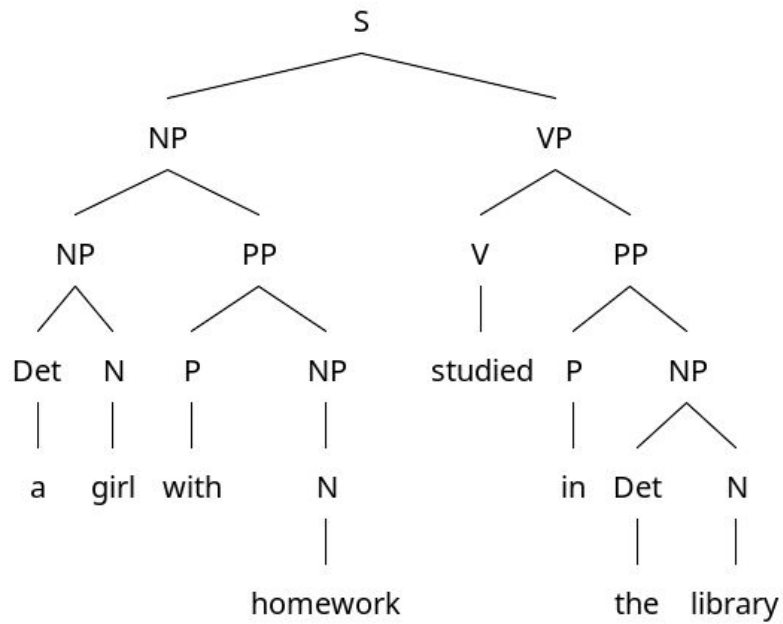
(3) **Drawing tree structures.** Draw tree structures for each of the following sentences. The second two sentences are structurally ambiguous; for these two sentences, give the trees corresponding to each legitimate structure and give an appropriate paraphrase for each.

(a) The angry giraffe chased my brother down the street.

S
- NP
  - Det
    - the
  - N
    - Adj
      - angry
    - N
      - giraffe
- TP
  - T
    - PAST
  - VP
    - VP
      - V
        - chased
      - NP
        - Det
          - my
        - N
          - brother
    - PP
      - P
        - down
      - NP
        - Det
          - the
        - N
          - street

Also acceptable:

S
- NP
  - Det
    - the
  - N
    - Adj
      - angry
    - N
      - giraffe
- TP
  - T
    - PAST
  - VP
    - V
      - chased
    - NP
      - NP
        - Det
          - my
        - N
          - brother
      - PP
        - P
          - down
        - NP
          - Det
            - the
          - N
            - street
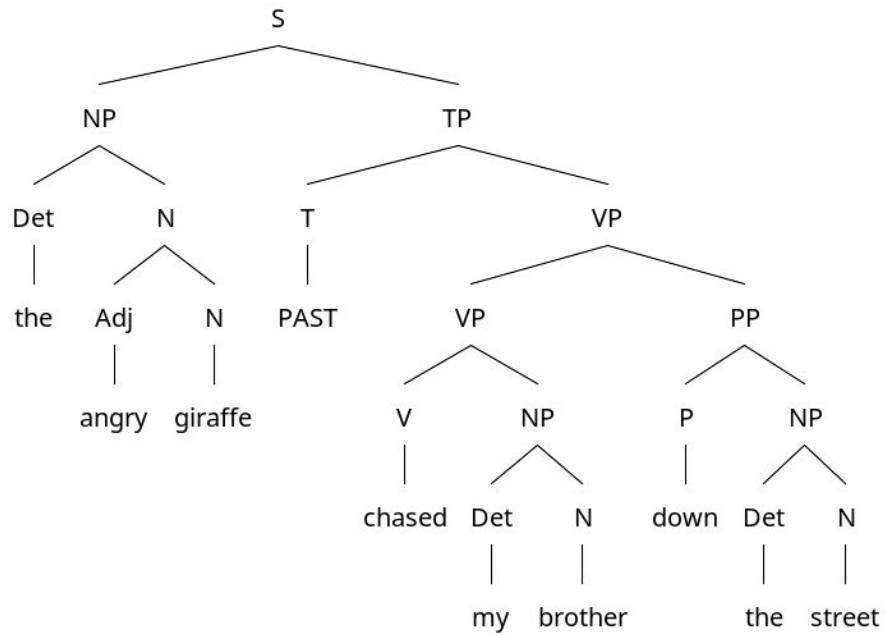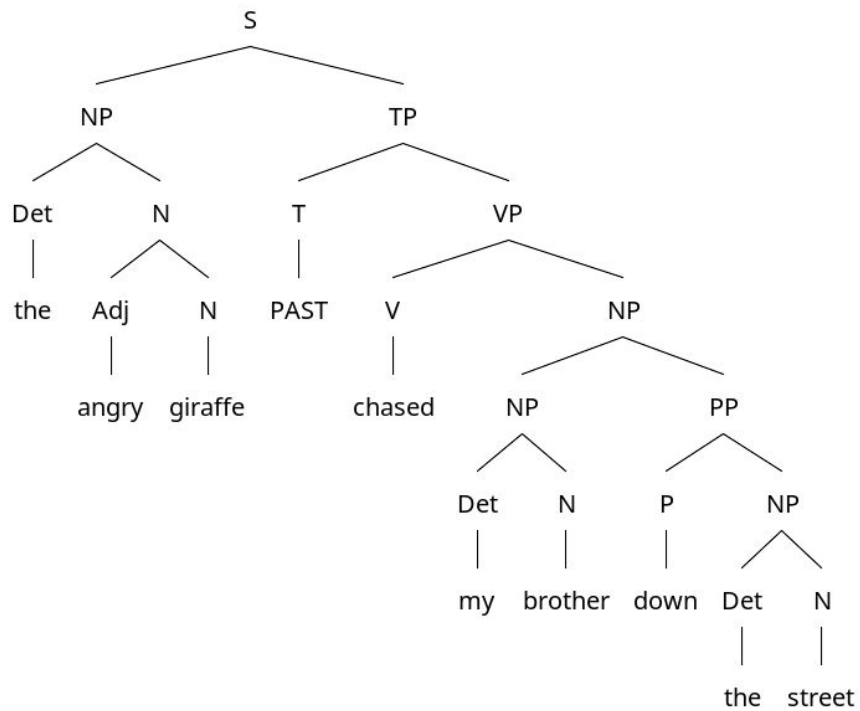
(b) Gerard ordered a hamburger with mustard and ketchup.

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                              S
                 ┌────────────┴────────────┐
                NP                         TP
                 │                ┌─────────┴─────────┐
                 N                T                   VP
                 │                │          ┌────────┴────────┐
              Gerard           PAST          V                NP
                                             │         ┌───────┴───────┐
                                          ordered     NP              PP
                                                    ┌──┴──┐       ┌────┴────┐
                                                   Det    N       P        NP
                                                    │     │       │    ┌────┼────┐
                                                    a  hamburger with  NP  Conj  NP
                                                                       │    │    │
                                                                       N   and   N
                                                                       │         │
                                                                    mustard   ketchup
```

Or, another way:

```
                              S
                 ┌────────────┴────────────┐
                NP                         TP
                 │                ┌─────────┴─────────┐
                 N                T                   VP
                 │                │          ┌────────┴────────┐
              Gerard           PAST          V                NP
                                             │         ┌───────┴───────┐
                                          ordered     NP              PP
                                                    ┌──┴──┐       ┌────┴────┐
                                                   Det    N       P        NP
                                                    │     │       │         │
                                                    a  hamburger with       N
                                                                       ┌────┼────┐
                                                                       N   Conj  N
                                                                       │    │    │
                                                                    mustard and ketchup
```
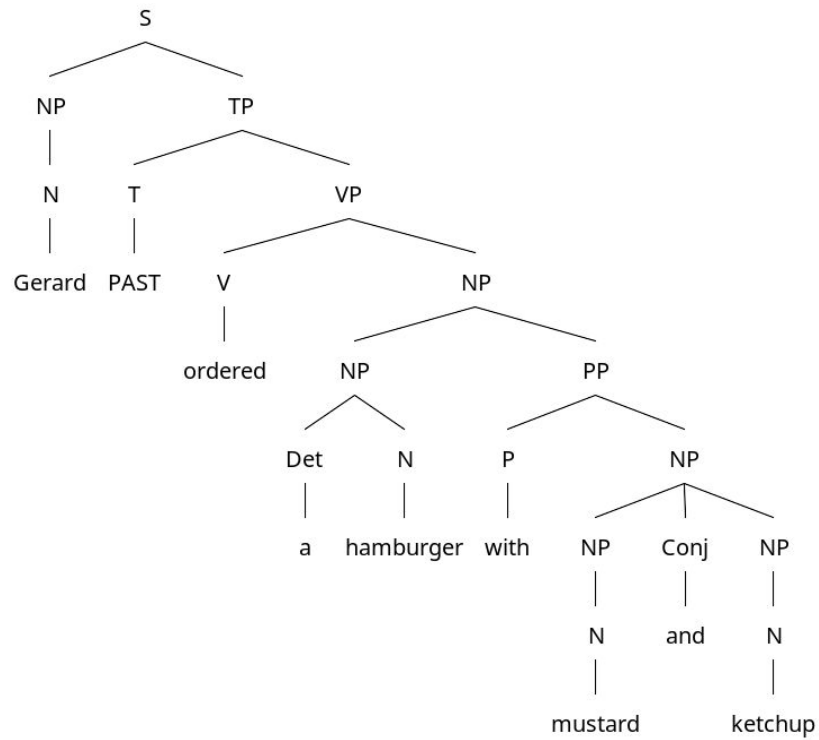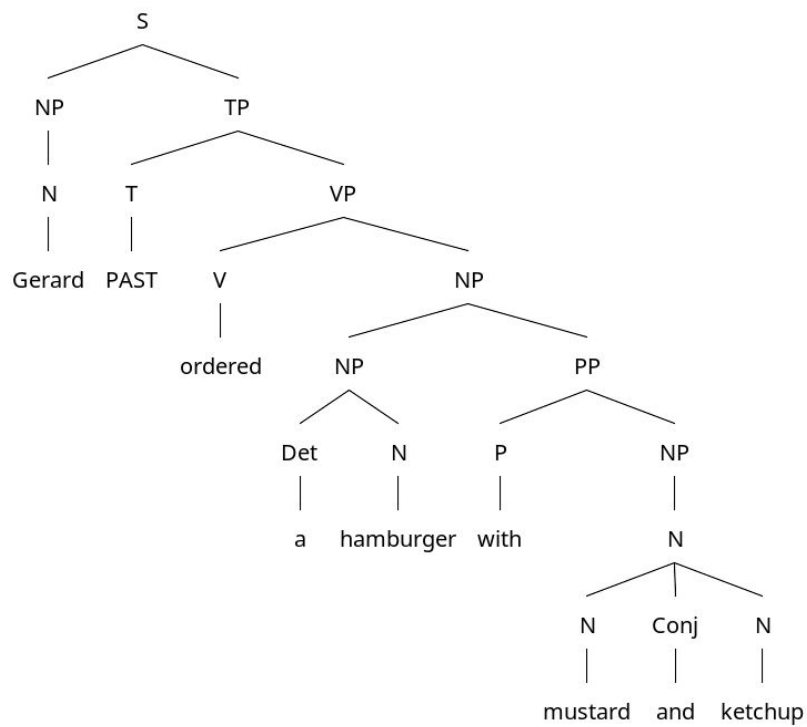
(c) In New York I saw beautiful dancers and acrobats.

```
                          S
              ┌───────────┴───────────┐
             PP                        S
         ┌────┴────┐            ┌───────┴───────┐
         P        NP           NP              TP
         │      ┌──┴──┐         │          ┌────┴────┐
         in     N     N         N     ┌────┘         VP
                │     │         │     T        ┌─────┴─────┐
               New   York       I    PAST      V          NP
                                           │              │
                                          saw             N
                                                   ┌──────┴──────┐
                                                  Adj            N
                                                   │       ┌─────┼─────┐
                                               beautiful   N    Conj   N
                                                           │     │     │
                                                        dancers and  acrobats
```
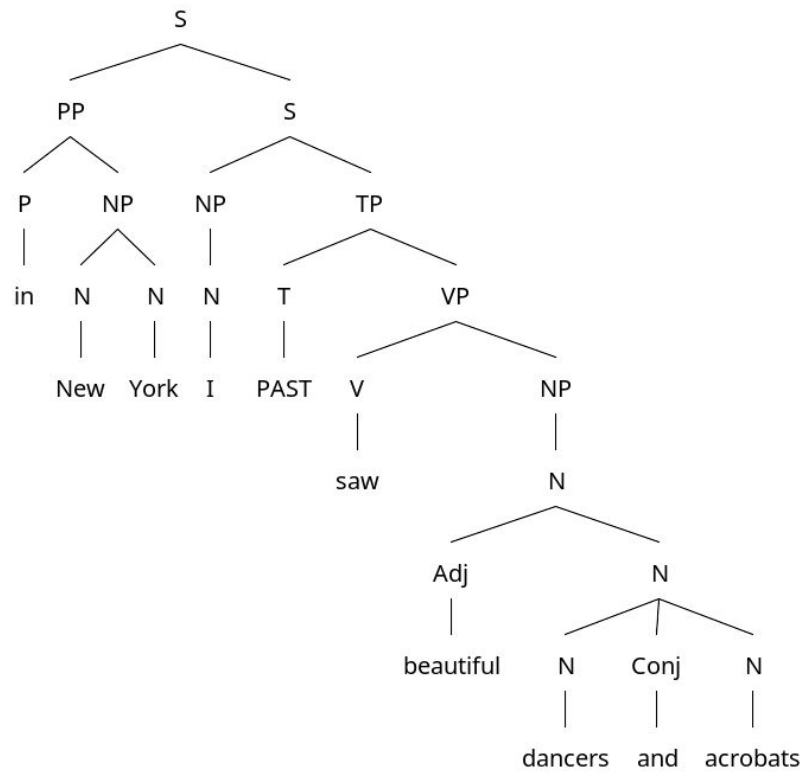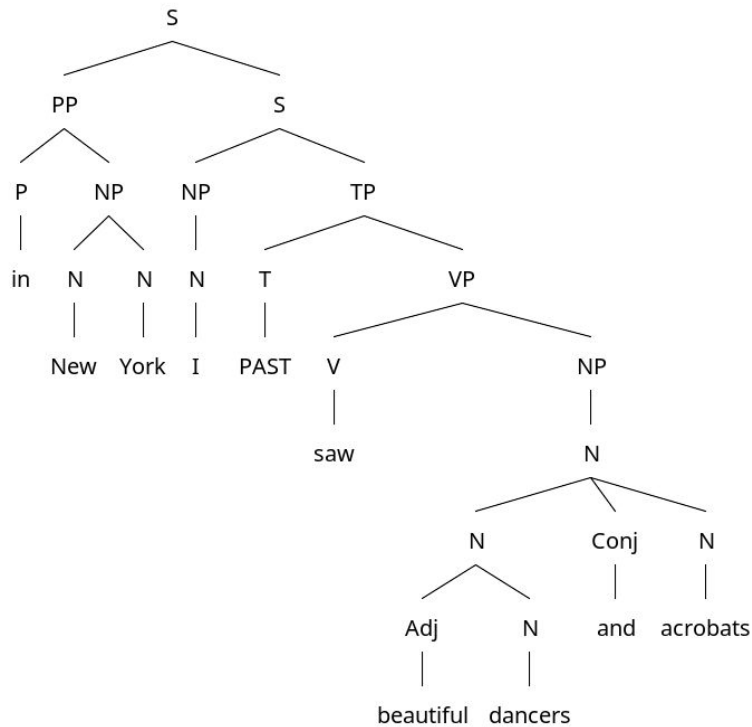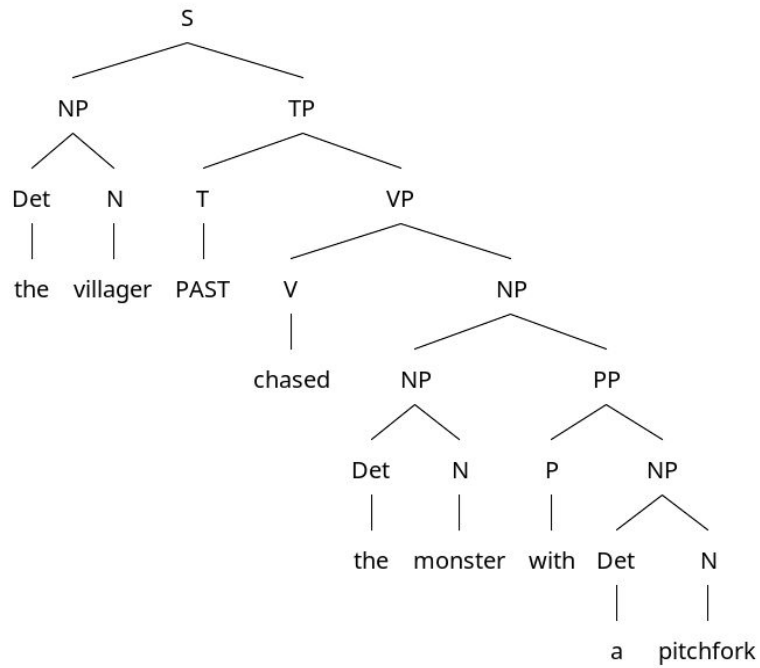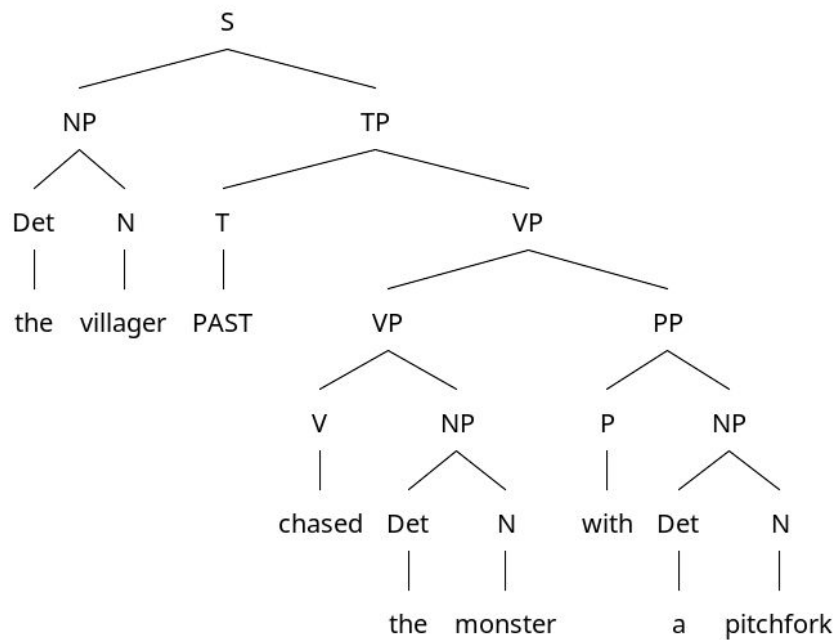
Above, both the dancers and the acrobats are beautiful; below, only the dancers are beautiful.

```
                          S
              ┌───────────┴───────────┐
             PP                        S
         ┌────┴────┐            ┌───────┴───────┐
         P        NP           NP              TP
         │      ┌──┴──┐         │          ┌────┴────┐
         in     N     N         N     ┌────┘         VP
                │     │         │     T        ┌─────┴─────┐
               New   York       I    PAST      V          NP
                                           │              │
                                          saw             N
                                                   ┌──────┴──────┐
                                                   N            Conj   N
                                               ┌───┴───┐         │     │
                                              Adj      N        and  acrobats
                                               │       │
                                           beautiful dancers
```

(d) The villager chased the monster with a pitchfork.

```
                      S
             ┌────────┴────────┐
            NP                 TP
          ┌──┴──┐        ┌──────┴──────┐
         Det    N        T             VP
          │     │        │        ┌────┴────┐
         the villager  PAST       V         NP
                                  │    ┌─────┴─────┐
                               chased  NP          PP
                                     ┌──┴──┐    ┌───┴───┐
                                    Det    N    P       NP
                                     │     │    │     ┌──┴──┐
                                    the monster with  Det    N
                                                       │     │
                                                       a  pitchfork
```

Above, the monster has the pitchfork; below the chasing is being done with a pitchfork

```
                      S
             ┌────────┴────────┐
            NP                 TP
          ┌──┴──┐        ┌──────┴──────┐
         Det    N        T             VP
          │     │        │        ┌────┴────┐
         the villager  PAST      VP         PP
                              ┌───┴───┐  ┌───┴───┐
                              V       NP  P       NP
                              │    ┌──┴──┐ │    ┌──┴──┐
                           chased Det    N with Det    N
                                   │     │      │     │
                                  the monster   a  pitchfork
```

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(4) **Recursive structures.** List the phrase structure rule for each of the following phrases. Which is recursive, and what is it recursive on?

      (a) [big landscape painting]   **NP → Adj N or NP → Adj NP   (recursive on NP)**

      (b) [saw Mary]   **VP → V NP (not recursive)**

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(5) **Traces.** The following sentences involve movement of a wh-word to the beginning of the sentence. These examples use the exact same words, but a slightly different order results in a completely different meaning. The reason for this difference is related to where the wh-word moved from – that is, where the trace of movement is. Identify the position of the trace in each sentence and explain how it relates to the differences in word order and meaning. It may help to consider the declarative (non-question) version of each sentence.

      (a) Who will hit Bill?   **Who _____ will hit Bill? (declarative: John will hit Bill)**

      (b) Who will Bill hit?   **Who will Bill hit _____? (declarative: Bill will hit John)**

      The difference between these two sentences is based on whether the movement is from subject position or object position. If the subject moves, the "gap" in the sentence will be before the verb; if the object moves, the "gap" will be after the verb.